

WHAT IS CLAIMED IS:

1. A driving mechanism comprising:

a base;

a first displacement part which has a pair of
5 ends and which can expand and contract between the pair
thereof, in which one of the pair is supported by the base;

a second displacement part which has a pair of
ends and which can expand and contract between the pair
thereof, in which one of the pair is supported by the base;
10 and

a resultant part which connects the other of the
pair of the first displacement part and the other of the
pair of the second displacement part to each other, in
which the resultant part has a contact part that contacts a
15 body to be driven by the contact part,

(wherein the contact part can elastically deform
in a direction in which the body is driven by the contact
part.)

2. The driving mechanism as claimed in claim 1,
20 which further comprises a driver which supplies the first
displacement part with a first driving signal and which
supplies the second displacement part with a second driving
signal, in which the first driving signal and the second
driving signal have predetermined different phases to each
25 other.

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5 4. The driving mechanism as claimed in claim 1,
which further comprises a driver which supplies the first
displacement part with a first driving signal having a
first phase and which supplies the second displacement part
with a second driving signal having a second phase, in
0 which the first phase is in one of a first state in which
the first phase is faster than the second phase by a
predetermined phase difference, and a second state in which
the first phase is slower than the second phase by a
predetermined phase difference.

wherein material and configuration of the base, of the first displacement part, of the second displacement part, and of the resultant part are selected so that resonant frequency of the elastic projecting part in the direction in which the body is driven is generally equal to resonant frequency of the first displacement part and the second displacement part in a direction perpendicular to the direction in which the body is driven.

① 6. The driving mechanism as claimed in claim 1, wherein the first displacement part, the second displacement part, the resultant part, and the contact part are provided generally symmetrically with respect to an axis which is generally perpendicular to the direction in which the body is driven, and

wherein the body can be driven forward and backward by the contact part.

① 7. The driving mechanism as claimed in claim 1, wherein driving force which the contact part exerts upon the body is equal to or smaller than frictional resistance which is gained by multiplying normal resistance which the contact part exerts upon the body, by frictional coefficient between the contact part and the body.

8. A driving mechanism comprising:

a first displacement part which has a pair of ends and which can expand and contract between the pair thereof;

a second displacement part which has a pair of ends and which can expand and contract between the pair thereof;

a resultant part which connects one of the pair of the first displacement part and one of the pair of the second displacement part to each other, in which the resultant part has a contact part that contacts a body to

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be driven by the contact part; and

a base for supporting the other of the pair of the first displacement part and the other of the pair of the second displacement part so that the contact part can have a displacement in a direction in which the body is driven by the contact part.

8. The driving mechanism as claimed in claim 8, wherein the first displacement part, the second displacement part, the resultant part, and the contact part are provided generally symmetrically with respect to an axis which is generally perpendicular to the direction in which the body is driven, and

wherein the body can be driven forward and backward by the contact part.

10. The driving mechanism as claimed in claim 8, wherein driving force which the contact part exerts upon the body is equal to or smaller than frictional resistance which is gained by multiplying normal resistance which the contact part exerts upon the body, by frictional coefficient between the contact part and the body.

11. An ultrasonic motor comprising:

a stator ring which has a ring-shaped piezoelectric vibrator and has a ring-shaped elastic member combined to the ring-shaped piezoelectric vibrator, in which the ring-shaped elastic member has an elastic piece;

Fig 18

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a ring-shaped rotor which is pressed against a tip portion of the elastic piece of the ring-shaped elastic member, in which the ring-shaped rotor is driven to rotate
5 by the stator ring,

wherein the elastic piece can deform in a direction in which the ring-shaped rotor is driven to rotate by the stator ring, (so that a slip between the elastic piece and the ring-shaped rotor is prevented.)

10 11 12. The ultrasonic motor as claimed in claim 11, wherein the frictional force exerted between the tip portion of the elastic piece and the ring-shaped rotor is greater than the force required to deform the elastic piece the tip portion of which is pressed against the ring-shaped
15 rotor.

11 13. The ultrasonic motor as claimed in claim 11, wherein driving force which the tip portion of the elastic piece of the ring-shaped elastic member exerts upon the ring-shaped rotor is equal to or smaller than frictional
20 resistance which is gained by multiplying normal resistance which the tip portion thereof exerts upon the ring-shaped rotor, by frictional coefficient between the tip portion thereof and the ring-shaped rotor.

14. An ultrasonic driving mechanism comprising:
25 an object to be driven;

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at least one pair of electrical-mechanical energy transducers which vibrate with predetermined different phases to cause a resultant elliptical vibration, in which the electrical-mechanical energy transducers are provided generally symmetrically with respect to an axis that is generally perpendicular to a direction in which the object is driven; and

an elastically deformable part which is provided generally symmetrically with respect to the axis, in which the resultant elliptical vibration is transmitted to the object via the elastically deformable part,

wherein the object can be driven forward and backward by the elastically deformable part.

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